

ABSTRACT OF THE DISCLOSURE

The present invention provides a method for preparing (S)-4-halo-3-hydroxybutyric acid ester comprises asymmetric reduction of 4-halo-acetoacetic acid ester using β -ketoacyl-acylcarrier protein reductase constituting Type II fatty acid synthase or acetoacetyl-CoA reductase constituting the poly- β -hydroxy fatty acid synthesis system. β -ketoacyl-acyl carrier protein reductase constituting Type II fatty acid synthase or acetoacetyl-CoA reductase constituting the poly- β -hydroxy fatty acid synthesis system has a extremely high reducing activity as well as stereoselectivity for (S)-4-chloro-3-hydroxybutyric acid ester. In addition, the enzyme exhibits almost no oxidizing activity toward either configuration of ethyl 4-chloro-3-hydroxybutyrate, performing only the reducing reaction of ethyl 4-chloroacetoacetate. Therefore, this enzyme can be used to efficiently produce (S)-4-halo-3-hydroxybutyric acid ester.